

ICF-9650W

*US Model
Canadian Model*



FM/AM 2-BAND RADIO

SPECIFICATIONS

- Frequency Range:** FM: 87.5–108 MHz
AM: 530–1,605 kHz (566–187 m)
- Antennas:** FM: Line antenna
External antenna terminals (75 Ω)
AM: Built-in ferrite-rod antenna
- Speaker:** Approx. 16 cm (6 $\frac{3}{8}$ inches) dia.
- Power Requirements:** 120 V ac, 60 Hz
- Power Consumption:** 20 W
- Dimensions:** Approx. 367 (w) x 236 (h) x 142 (d) mm
14 $\frac{1}{2}$ (w) x 9 $\frac{3}{8}$ (h) x 5 $\frac{5}{8}$ (d) inches
including projecting parts and controls
- Weight:** Approx. 2.8 kg, 6 lb 3 oz

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND  MARK ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ !

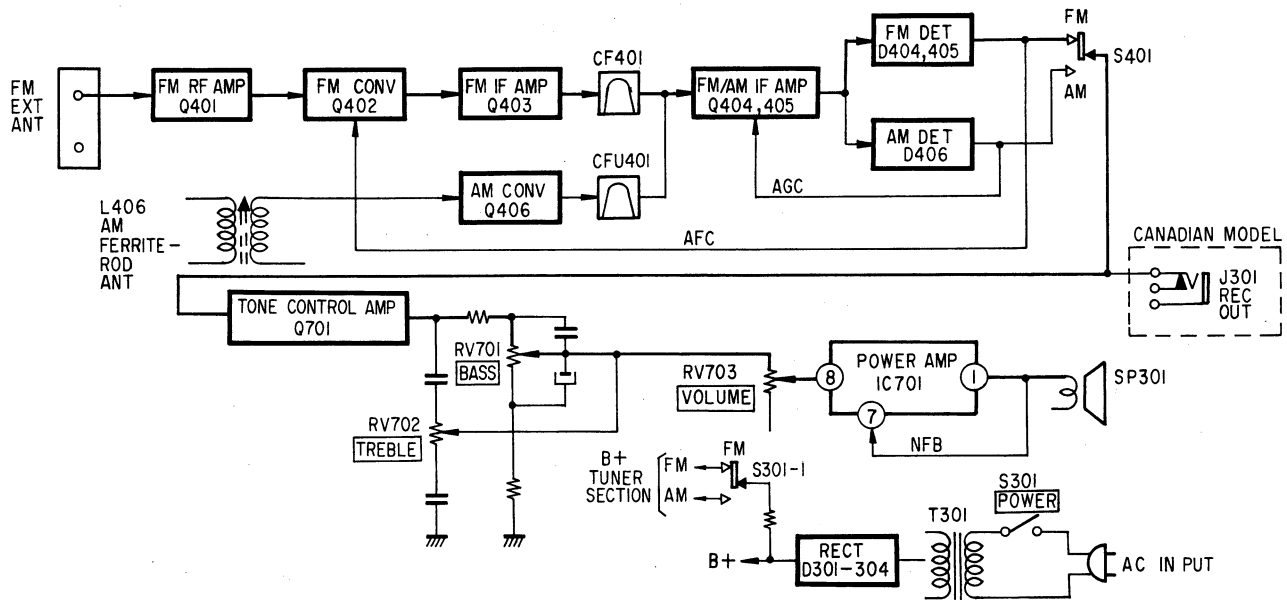
LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY.

SONY
SERVICE MANUAL

SECTION 1

OUTLINE

1-1. BLOCK DIAGRAM



SECTION 2

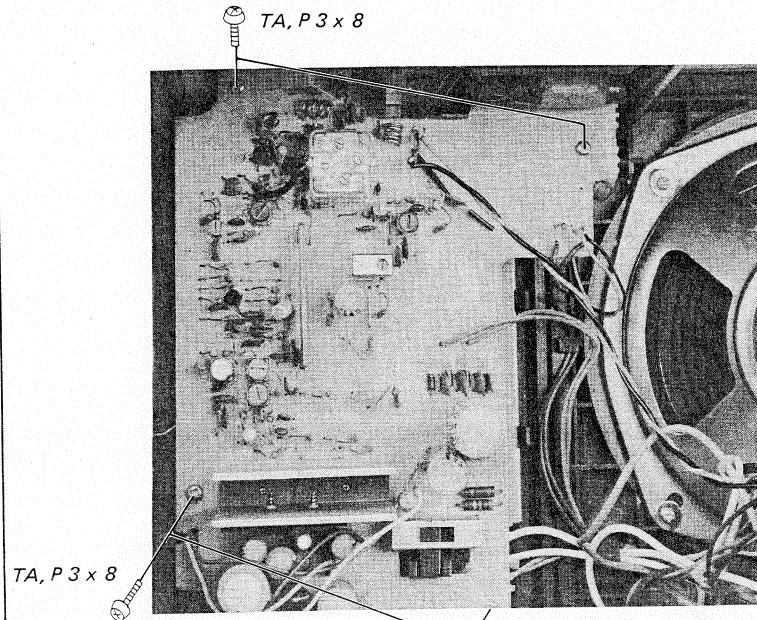
DISASSEMBLY

2-1. REMOVAL

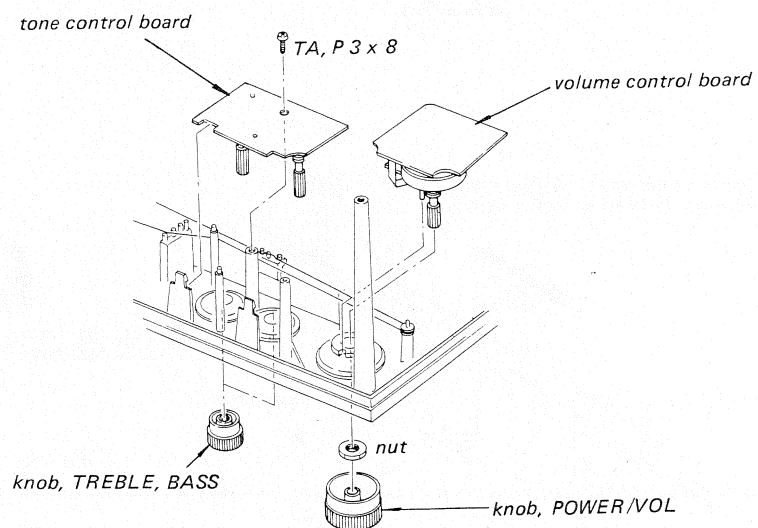
REAR BOARD REMOVAL

Remove five screws (TA, P 3 x 20) and two screws (TA, P 3 x 12) from the rear board.

MAIN BOARD REMOVAL

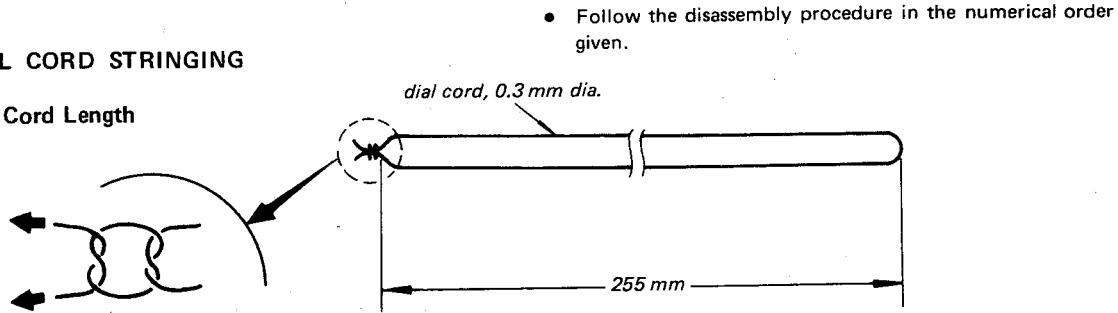


VOLUME CONTROL BOARD AND TONE CONTROL BOARD REMOVAL

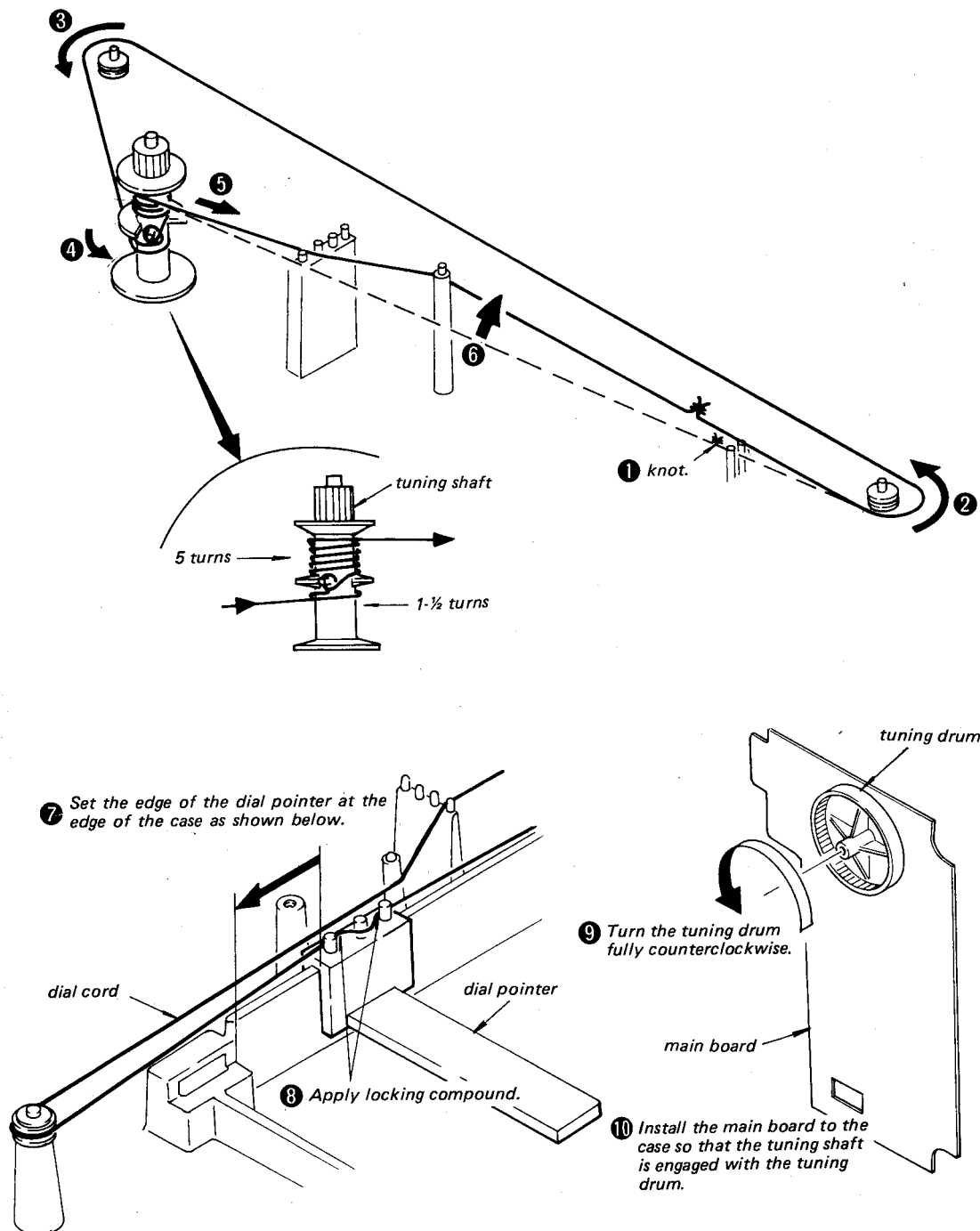


2-2. DIAL CORD STRINGING

(1) Dial Cord Length

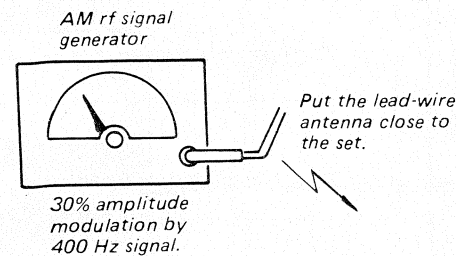


(2) Dial Cord Stringing

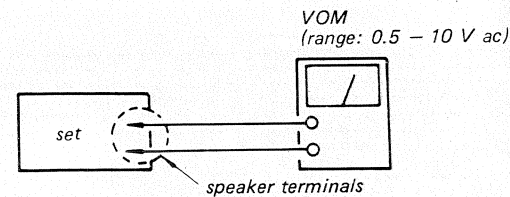


SECTION 3 ADJUSTMENTS

AM SECTION



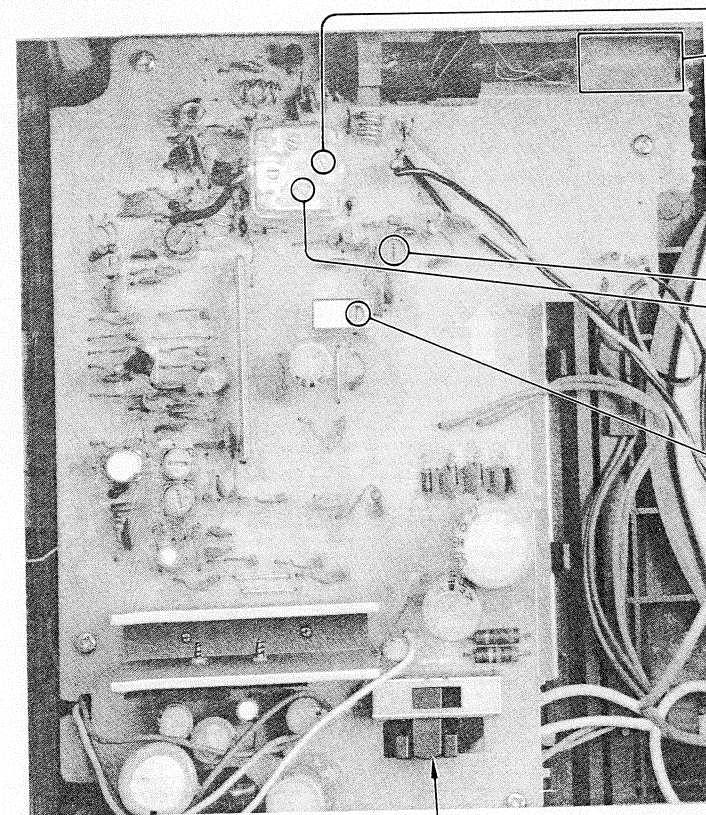
- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.



AM TRACKING ADJUSTMENT	
Adjust for maximum reading on VOM.	
CT403	1,400 kHz
L406	620 kHz

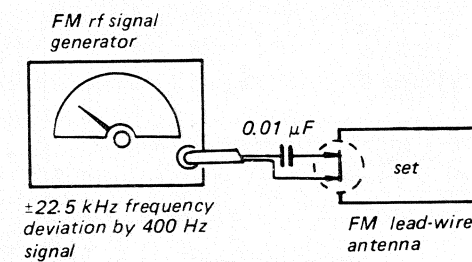
AM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for maximum reading on VOM.	
L407	520 kHz
CT404	1,680 kHz

AM IF ALIGNMENT	
Adjust for maximum reading on VOM.	
CFU401	455 kHz

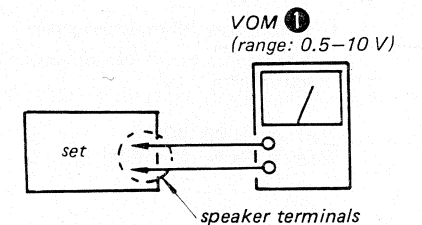


band selector
AM → FM

FM SECTION



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

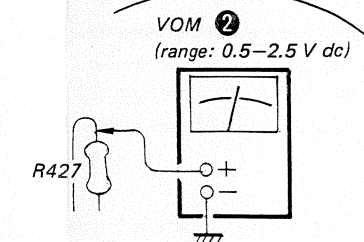
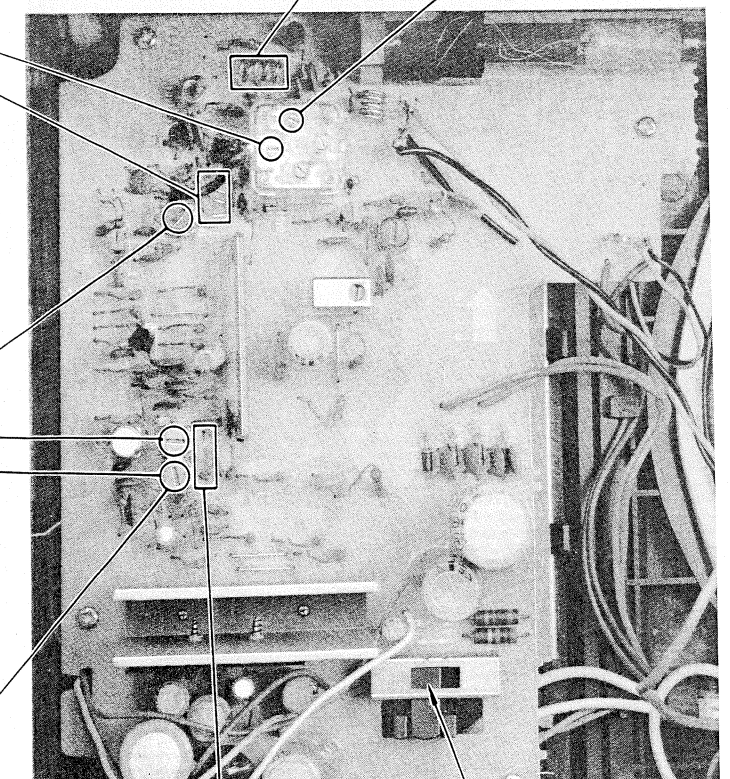


FM TRACKING ADJUSTMENT	
Adjust for maximum reading on VOM ①.	
86.5 MHz	109.5 MHz
L402, L403	CT401

FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for maximum reading on VOM ①.	
109.5 MHz	CT402
86.5 MHz	L405

FM IF ALIGNMENT 1 (10.7 MHz with modulation)	
Adjust for maximum reading on VOM ①.	
T401	
T402	
T403	

FM IF ALIGNMENT 2 (10.7 MHz with no modulation)	
Adjust for 0 V dc on VOM ②.	
T403	



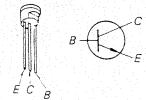
band selector
AM → FM

SECTION 4
DIAGRAMS

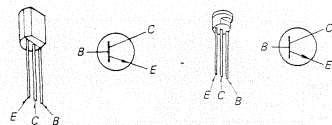
4-1. MOUNTING DIAGRAM
— Conductor Side —

- Replacement Semiconductors
For replacement, use semiconductors except in ().

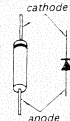
Q401-405: 2SC930
Q406: 2SC930 (2SC929)



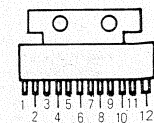
Q701: 2SC1364 (2SC536)



D301-304: 10E2 (1N4002)
D401, 403: 1S1555
D407: (1S953)
D402: 1S2139C (SD113)
D404, 405: 1T261 (1S188FM)
D406: 1T22AM (1S188AM)

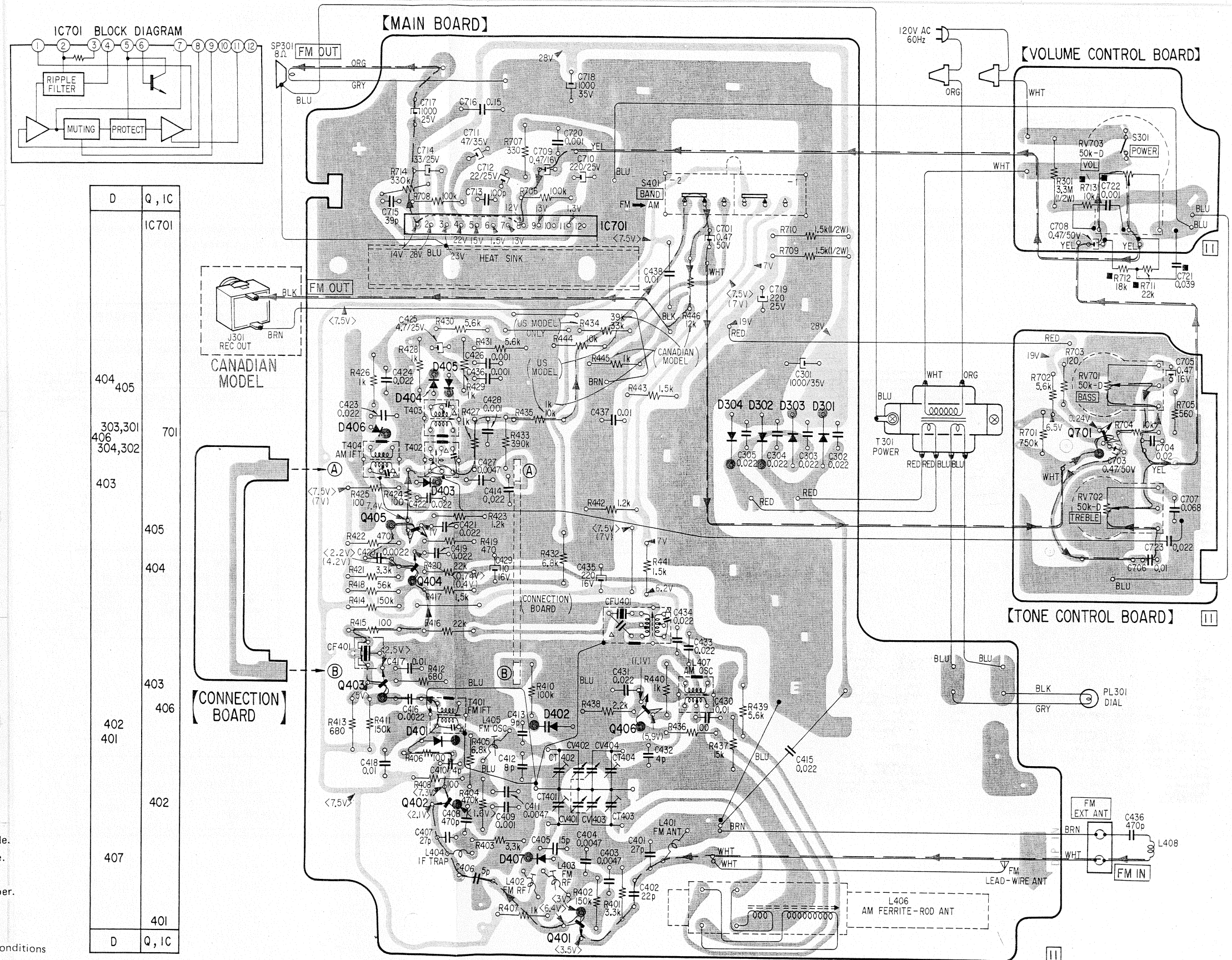


IC701: LA4230



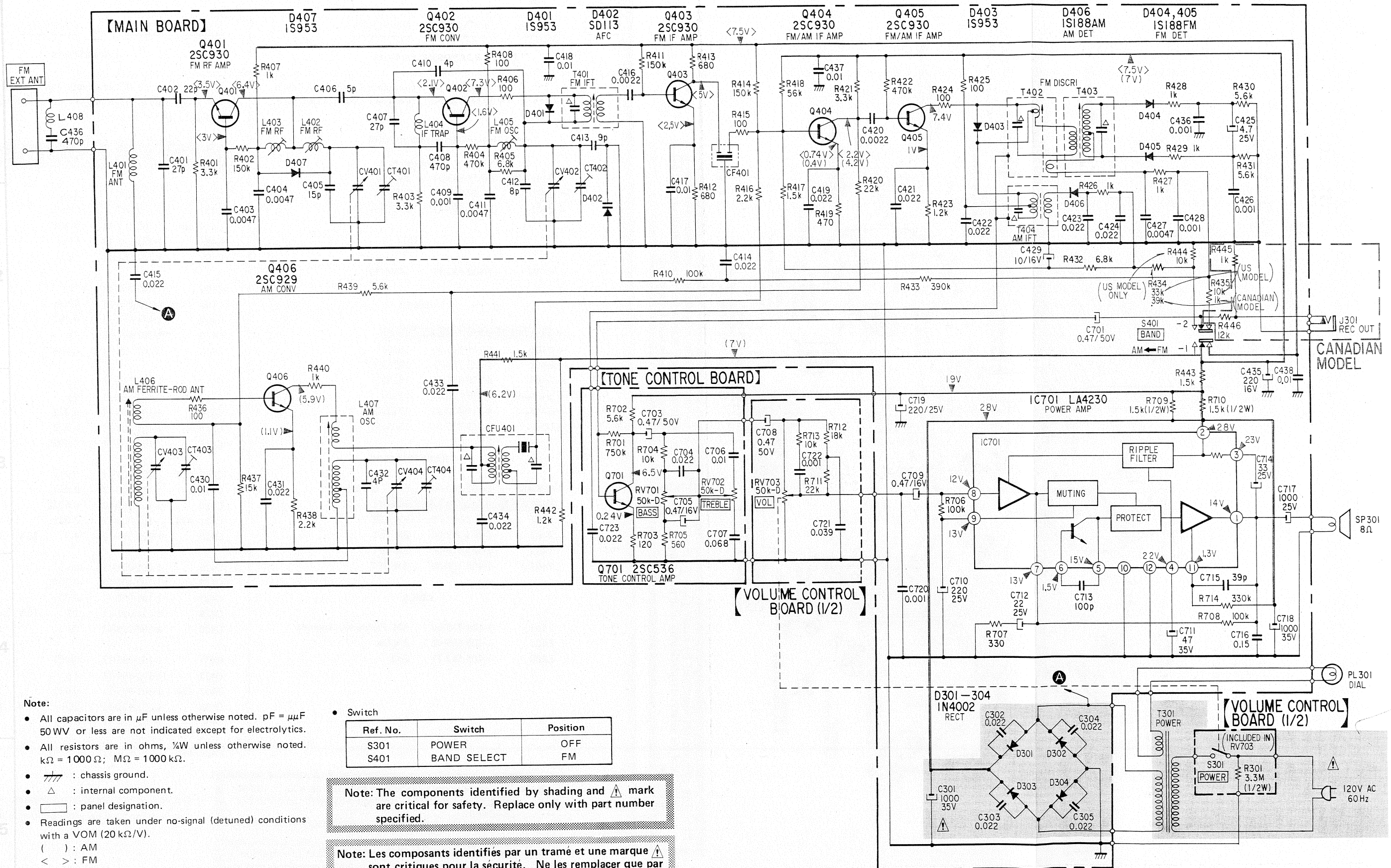
- Note:
- : parts extracted from the component side.
 - : parts extracted from the conductor side.
 - : part mounted on the conductor side.
 - : indicates side identified with part number.
 - : B+ pattern.
 - : signal path.

* Readings are taken under no-signal (detuned) conditions with a VOM (20 kΩ/V).
(): AM
< > : FM
no mark: common



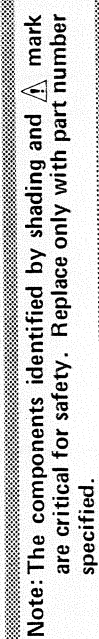
ICF-9650W ICF-9650W

4-2. SCHEMATIC DIAGRAM



SECTION 6

ELECTRICAL PARTS LIST



⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		
C701	1-121-726-11	0.47	50 V	elect
C703	1-121-726-11	0.47	50 V	elect
C704	1-108-587-12	0.022		mylar
C705	1-131-455-11	0.47	16 V	tantalum
C706	1-108-239-12	0.01		mylar
C707	1-108-599-12	0.068		mylar
C708	1-121-726-11	0.47	50 V	elect
C709	1-131-455-11	0.47	16 V	tantalum
C710	1-121-261-11	220	25 V	elect
C711	1-121-653-11	47	35 V	elect
C712	1-121-480-11	22	25 V	elect
C713	1-102-702-11	100 p		
C714	1-121-404-11	33	25 V	elect
C715	1-102-693-11	39 p		
C716	1-108-607-12	0.15		mylar
C717, 718	1-121-388-11	1000	25 V	elect
C719	1-121-422-11	220	25 V	elect
C720	1-101-001-11	0.001		
C721	1-161-058-11	0.039		(semiconductor)
C722	1-101-001-11	0.001		
C723	1-101-005-11	0.022		

CT401-404
CV401-404

1-151-341-00 Tuning

RESISTORS

All resistors are in ohms. Common 1/4W carbon resistors are omitted. Refer to the list on page 13 for the their resistance values. (k Ω = 1000 Ω , M Ω = 1000 k Ω)

R301	 1-202-657-11	3.3 M	1/2 W	composition
R709, 710	1-202-577-11	1.5 k	1/2 W	composition
RV701, 702	1-226-298-00	50 k-D, variable;		TREBLE, BASS
RV703	 1-226-299-11	50 k-D, variable;		POWER/VOL (US model) with power switch (S301)
RV703	 1-226-299-21	50 k Ω -D, variable;		POWER/VOL (Canadian model) with power switch (S301)

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
MISCELLANEOUS		
CF401	1-527-206-00	Filter, ceramic; 10.7 MHz
J301	1-507-011-00	Jack, REC OUT (Canadian model)
PL301	1-518-154-00	Lamp, dial
S401	1-552-479-00	Switch, slide, BAND SELECT
SP301	1-502-599-00	Speaker
	 1-551-509-00	Cord, power

ACCESSORIES AND PACKING MATERIALS

<u>Part No.</u>	<u>Description</u>
3-995-808-21	Manual, instruction (US model)
3-984-063-00	Cushion
3-984-064-00	Carton (US model)
3-984-071-00	Carton (Canadian model)
3-993-159-31	Manual, instruction (Canadian model)
3-993-166-31	Leaflet, instruction (Canadian model)

Note: The components identified by shading and  mark are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

1/4 WATT CARBON RESISTORS

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-244-601-11	10	1-244-625-11	100	1-244-649-11	1.0k	1-244-673-11	10k	1-244-697-11	100k	1-244-721-11	1.0M	1-244-745-11
1.1	1-244-602-11	11	1-244-626-11	110	1-244-650-11	1.1k	1-244-674-11	11k	1-244-698-11	110k	1-244-722-11	1.1M	1-244-746-11
1.2	1-244-603-11	12	1-244-627-11	120	1-244-651-11	1.2k	1-244-675-11	12k	1-244-699-11	120k	1-244-723-11	1.2M	1-244-747-11
1.3	1-244-604-11	13	1-244-628-11	130	1-244-652-11	1.3k	1-244-676-11	13k	1-244-700-11	130k	1-244-724-11	1.3M	1-244-748-11
1.5	1-244-605-11	15	1-244-629-11	150	1-244-653-11	1.5k	1-244-677-11	15k	1-244-701-11	150k	1-244-725-11	1.5M	1-244-749-11
1.6	1-244-606-11	16	1-244-630-11	160	1-244-654-11	1.6k	1-244-678-11	16k	1-244-702-11	160k	1-244-726-11	1.6M	1-244-750-11
1.8	1-244-607-11	18	1-244-631-11	180	1-244-655-11	1.8k	1-244-679-11	18k	1-244-703-11	180k	1-244-737-11	1.8M	1-244-751-11
2.0	1-244-608-11	20	1-244-632-11	200	1-244-656-11	2.0k	1-244-680-11	20k	1-244-704-11	200k	1-244-728-11	2.0M	1-244-752-11
2.2	1-244-609-11	22	1-244-633-11	220	1-244-657-11	2.2k	1-244-681-11	22k	1-244-705-11	220k	1-244-729-11	2.2M	1-244-753-11
2.4	1-244-610-11	24	1-244-634-11	240	1-244-658-11	2.4k	1-244-682-11	24k	1-244-706-11	240k	1-244-730-11	2.4M	1-244-754-11
2.7	1-244-611-11	27	1-244-635-11	270	1-244-659-11	2.7k	1-244-683-11	27k	1-244-707-11	270k	1-244-731-11	2.7M	1-244-755-11
3.0	1-244-612-11	30	1-244-636-11	300	1-244-660-11	3.0k	1-244-684-11	30k	1-244-708-11	300k	1-244-732-11	3.0M	1-244-756-11
3.3	1-244-613-11	33	1-244-637-11	330	1-244-661-11	3.3k	1-244-685-11	33k	1-244-709-11	330k	1-244-733-11	3.3M	1-244-757-11
3.6	1-244-614-11	36	1-244-638-11	360	1-244-662-11	3.6k	1-244-686-11	36k	1-244-710-11	360k	1-244-734-11	3.6M	1-244-758-11
3.9	1-244-615-11	39	1-244-639-11	390	1-244-663-11	3.9k	1-244-687-11	39k	1-244-711-11	390k	1-244-735-11	3.9M	1-244-759-11
4.3	1-244-616-11	43	1-244-640-11	430	1-244-664-11	4.3k	1-244-688-11	43k	1-244-712-11	430k	1-244-736-11	4.3M	1-244-760-11
4.7	1-244-617-11	47	1-244-641-11	470	1-244-665-11	4.7k	1-244-689-11	47k	1-244-713-11	470k	1-244-737-11	4.7M	1-244-761-11
5.1	1-244-618-11	51	1-244-642-11	510	1-244-666-11	5.1k	1-244-690-11	51k	1-244-714-11	510k	1-244-738-11	5.1M	1-244-762-11
5.6	1-244-619-11	56	1-244-643-11	560	1-244-667-11	5.6k	1-244-691-11	56k	1-244-715-11	560k	1-244-739-11		
6.2	1-244-620-11	62	1-244-644-11	620	1-244-668-11	6.2k	1-244-692-11	62k	1-244-716-11	620k	1-244-740-11		
6.8	1-244-621-11	68	1-244-645-11	680	1-244-669-11	6.8k	1-244-693-11	68k	1-244-717-11	680k	1-244-741-11		
7.5	1-244-622-11	75	1-244-646-11	750	1-244-670-11	7.5k	1-244-694-11	75k	1-244-718-11	750k	1-244-742-11		
8.2	1-244-623-11	82	1-244-647-11	820	1-244-671-11	8.2k	1-244-695-11	82k	1-244-719-11	820k	1-244-743-11		
9.1	1-244-624-11	91	1-244-648-11	910	1-244-672-11	9.1k	1-244-696-11	91k	1-244-720-11	910k	1-244-744-11		

HARDWARE NOMENCLATURE

Screw:

P 3 x 10

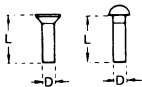
L: Length in mm

D: Diameter in mm

Type of head

Indicated slotted-head only.

Unless otherwise indicated, it means cross-recessed head (Phillips type).



Nut, Washer, Retaining ring:

N 3

Diameter of usable screw or shaft

Reference designation

Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		brazer-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self-tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

Sony Corporation

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